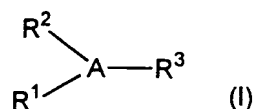


## WHAT IS CLAIMED IS:

1. A compound of the formula (I) below, or a pharmacologically acceptable salt, ester or other derivative thereof:



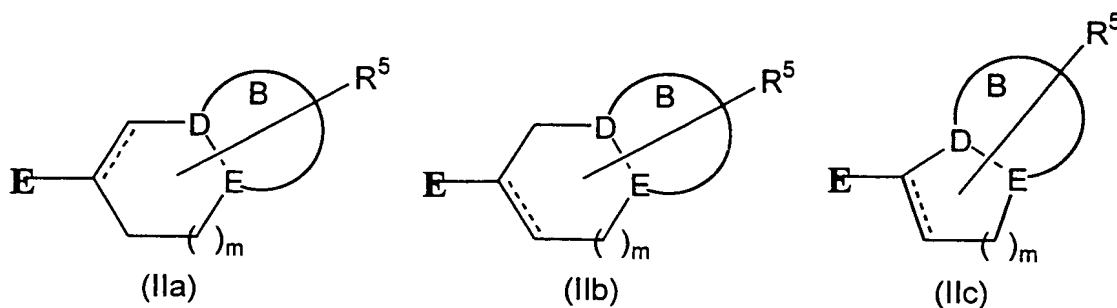
wherein:

A represents a trivalent group selected from the group consisting of a benzene ring having three substituents  $\text{R}^4$ , a pyridine ring having two substituents  $\text{R}^4$ , a pyridazine ring having one substituent  $\text{R}^4$ , a pyrimidine ring having one substituent  $\text{R}^4$ , a furan ring having one substituent  $\text{R}^4$ , a thiophene ring having one substituent  $\text{R}^4$ , a pyrazole ring having one substituent  $\text{R}^4$ , an imidazole ring having one substituent  $\text{R}^4$ , an isoxazole ring and an isothiazole ring;

$\text{R}^1$  represents an unsubstituted aryl group, an aryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ , an unsubstituted heteroaryl group, or a heteroaryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$\text{R}^2$  represents a heteroaryl group which has at least one ring nitrogen atom, or a heteroaryl group which has at least one ring nitrogen atom, wherein said heteroaryl group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; and

$\text{R}^3$  represents a group of formula (IIa), (IIb) or (IIc) shown below:



wherein

a bond including a dotted line represents a single bond or a double bond,

m represents 1 or 2,

$R^5$  represents from 1 to 3 substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

one of D and E represents a nitrogen atom and the other represents a group of formula  $>C(R^6)-$ , wherein  $R^6$  is a substituent selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$  and Substituent group  $\beta$ , and

B represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups, and

$R^4$  represents a hydrogen atom; a substituent from Substituent group  $\beta$ ; a cycloalkyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted aryl group, an aryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heteroaryl group, a heteroaryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heterocyclyl group, or a heterocyclyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ , PROVIDED THAT said substituents  $R^1$  and  $R^3$  are bonded to the two atoms of said cyclic group A which are adjacent to the atom of the cyclic group A to which said substituent  $R^2$  is bonded;

Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, nitro groups, cyano groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $-NR^aR^b$ , wherein  $R^a$  and  $R^b$  are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or  $R^a$  and  $R^b$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group;

Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with one or more substituents from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with one or more substituents from Substituent group  $\alpha$  and lower alkynyl which are substituted with one or more substituents which are substituted with one or more substituents selected from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

oxo groups; hydroxyimino groups; lower alkoxyimino groups; lower alkylene groups; lower alkylendioxy groups; lower alkylsulfinyl groups; lower alkylsulfonyl groups; unsubstituted aryl groups; aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; unsubstituted aryloxy groups; aryloxy groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; lower alkylidenyl groups and aralkylidenyl groups.

2. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted aryl group, or an aryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

3. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl or naphthyl group, or a phenyl or naphthyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

4. The compounds according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl group, or a phenyl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha^1$  and Substituent group  $\beta^1$ ,

Substituent group  $\alpha^1$  is selected from the group consisting of

halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups and groups of formula  $-\text{NR}^a\text{R}^b$ , wherein one of  $\text{R}^a$  and  $\text{R}^b$  represents a hydrogen atom or a lower alkyl group, and the other represents a hydrogen atom, a lower alkyl group or an aralkyl group, and

Substituent group  $\beta^1$  is selected from the group consisting of

lower alkyl groups, halogeno lower alkyl groups, hydroxyl lower alkyl groups, nitro lower alkyl groups, amino lower alkyl groups, lower alkylamino lower alkyl groups, di(lower alkyl)amino lower alkyl groups and aralkylamino lower alkyl groups.

5. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $\text{R}^1$  is an unsubstituted phenyl group, or a phenyl group which is substituted with one or more substituents selected from the group consisting of a halogen atom, a halogeno lower alkyl group and a halogeno lower alkoxy group.
6. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $\text{R}^1$  is a phenyl, 4-fluorophenyl, 3-fluorophenyl, 3-chlorophenyl, 3,4-difluorophenyl, 3,4,5-trifluorophenyl, 3-chloro-4-fluorophenyl, 3-difluoromethoxyphenyl or 3-trifluoromethylphenyl group.
7. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $\text{R}^2$  is a 5- or 6-membered heteroaryl group which has one or two nitrogen atoms, or a 5- or 6-membered heteroaryl group which has one or two nitrogen atoms in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .
8. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $\text{R}^2$  is an unsubstituted pyridyl or pyrimidinyl

group, or a pyridyl or pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

9. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

10. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group in which said group is substituted at the 2-position thereof with one substituent selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

11. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group which is substituted at the 2-position thereof with one substituent selected from the group consisting of methoxy, amino, methylamino, benzylamino and  $\alpha$ -methylbenzylamino.

12. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which has one ring nitrogen atom and optionally has one further ring heteroatom or ring group selected from the group consisting of a nitrogen atom, an oxygen atom, a sulfur atom, an  $>SO$  group and an  $>SO_2$  group, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups.

13. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^3$  is a group of formula (IIa) or formula

(IIb), and B is a 5- or 6-membered heterocyclic ring which comprises the group D, the group E and three or four carbon atoms, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups.

14. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^3$  is a group of formula (IIa).

15. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein B is a pyrrolidine ring or a pyrroline ring.

16. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein m is 1.

17. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma^1$ , wherein

Substituent group  $\gamma^1$  is selected from the group consisting of

oxo groups, hydroxyimino groups, lower alkoxyimino groups, lower alkylene groups, lower alkylenedioxy groups, lower alkylsulfinyl groups, lower alkylsulfonyl groups, unsubstituted aryl groups, and aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

18. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, halogen atoms, lower alkoxy groups, lower alkylthio groups, halogeno lower alkoxy groups, lower alkyl groups, halogeno lower alkyl groups, oxo groups, unsubstituted aryl groups, aryl groups which are substituted with one or more substituents selected

from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; lower alkylene groups; lower alkylenedioxy groups and lower alkylsulfonyl groups.

19. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, fluorine atoms, chlorine atoms, methoxy groups, ethoxy groups, propoxy groups, methyl groups, ethyl groups, propyl groups, unsubstituted phenyl groups and phenyl groups which are substituted with substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .
20. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^5$  is one substituent which is independently selected from the group consisting of hydrogen atoms, methoxy groups, methyl groups, ethyl groups, propyl groups and phenyl groups.
21. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^4$  is a hydrogen atom, an unsubstituted lower alkyl group, a lower alkyl group which is substituted with one or more substituents from Substituent group  $\alpha$ , an aryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heterocyclyl group, or a heterocyclyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ .
22. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^4$  is a hydrogen atom, a lower alkyl group, a halogeno lower alkyl group, or a phenyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ .

23. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein A is a pyrazole ring having one substituent  $R^4$  or an imidazole ring having one substituent  $R^4$ .

24. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein A is a pyrazole ring having one substituent  $R^4$ .

25. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted aryl group, or an aryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^2$  is a 5- or 6-membered heteroaryl group which has one or two nitrogen atoms, or a 5- or 6-membered heteroaryl group which has one or two nitrogen atoms in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which has one ring nitrogen atom and optionally has one further ring heteroatom or ring group selected from the group consisting of a nitrogen atom, an oxygen atom, a sulfur atom, an  $>SO$  group and an  $>SO_2$  group, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups ;and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma^1$ , wherein Substituent group  $\gamma^1$  is selected from the group consisting of oxo groups, hydroxyimino groups, lower alkoxyimino groups, lower alkylene groups, lower alkylendioxy groups, lower alkylsulfinyl groups, lower



alkylsulfonyl groups, unsubstituted aryl groups, and aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

26. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl or naphthyl group, or a phenyl or naphthyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^2$  is an unsubstituted pyridyl or pyrimidinyl group, or a pyridyl or pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which has one ring nitrogen atom and optionally has one further ring heteroatom or ring group selected from the group consisting of a nitrogen atom, an oxygen atom, a sulfur atom, an  $>SO$  group and an  $>SO_2$  group, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups; and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, halogen atoms, lower alkoxy groups, lower alkylthio groups, halogeno lower alkoxy groups, lower alkyl groups, halogeno lower alkyl groups, oxo groups, unsubstituted aryl groups, aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; lower alkylene groups; lower alkylenedioxy groups and lower alkylsulfonyl groups.

27. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl or naphthyl group, or a phenyl or naphthyl group in which said group is substituted with one or

more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^2$  is an unsubstituted pyridyl or pyrimidinyl group, or a pyridyl or pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which comprises the group D, the group E and three or four carbon atoms, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups; and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, halogen atoms, lower alkoxy groups, lower alkylthio groups, halogeno lower alkoxy groups, lower alkyl groups, halogeno lower alkyl groups, oxo groups, unsubstituted aryl groups, aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; lower alkylene groups; lower alkylendioxy groups and lower alkylsulfonyl groups.

28. The compounds according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl group, or a phenyl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha^1$  and Substituent group  $\beta^1$ ,

Substituent group  $\alpha^1$  is selected from the group consisting of

halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups and groups of formula  $-NR^aR^b$ , wherein one of  $R^a$  and  $R^b$  represents a hydrogen atom or a lower alkyl group, and the other represents a hydrogen atom, a lower alkyl group or an aralkyl group, and

Substituent group  $\beta^1$  is selected from the group consisting of

lower alkyl groups, halogeno lower alkyl groups, hydroxyl lower alkyl groups, nitro lower alkyl groups, amino lower alkyl groups, lower alkylamino lower alkyl groups, di(lower alkyl)amino lower alkyl groups and aralkylamino lower alkyl groups;

$R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which comprises the group D, the group E and three or four carbon atoms, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups; and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, halogen atoms, lower alkoxy groups, lower alkylthio groups, halogeno lower alkoxy groups, lower alkyl groups, halogeno lower alkyl groups, oxo groups, unsubstituted aryl groups, aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; lower alkylene groups; lower alkylendioxy groups and lower alkylsulfonyl groups.

29. The compounds according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl group, or a phenyl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha^1$  and Substituent group  $\beta^1$ ,

Substituent group  $\alpha^1$  is selected from the group consisting of

halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups and groups of formula  $-NR^aR^b$ , wherein one of  $R^a$  and  $R^b$  represents a hydrogen atom or a lower

alkyl group, and the other represents a hydrogen atom, a lower alkyl group or an aralkyl group, and

Substituent group  $\beta^1$  is selected from the group consisting of

lower alkyl groups, halogeno lower alkyl groups, hydroxyl lower alkyl groups, nitro lower alkyl groups, amino lower alkyl groups, lower alkylamino lower alkyl groups, di(lower alkyl)amino lower alkyl groups and aralkylamino lower alkyl groups;

$R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group in which said group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa) or formula (IIb), and B is a 5- or 6-membered heterocyclic ring which comprises the group D, the group E and three or four carbon atoms, said ring may be saturated or unsaturated and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups; and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, fluorine atoms, chlorine atoms, methoxy groups, ethoxy groups, propoxy groups, methyl groups, ethyl groups, propyl groups, unsubstituted phenyl groups and phenyl groups which are substituted with substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

30. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is an unsubstituted phenyl group, or a phenyl group which is substituted with one or more substituents selected from the group consisting of a halogen atom, a halogeno lower alkyl group and a halogeno lower alkoxy group;

$R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group in which said group is substituted at the 2-position thereof with one

substituent selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$R^3$  is a group of formula (IIa); and

$R^5$  is one or two substituents which are independently selected from the group consisting of hydrogen atoms, hydroxy groups, fluorine atoms, chlorine atoms, methoxy groups, ethoxy groups, propoxy groups, methyl groups, ethyl groups, propyl groups, unsubstituted phenyl groups and phenyl groups which are substituted with substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

31. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is a phenyl, 4-fluorophenyl, 3-fluorophenyl, 3-chlorophenyl, 3,4-difluorophenyl, 3,4,5-trifluorophenyl, 3-chloro-4-fluorophenyl, 3-difluoromethoxyphenyl or 3-trifluoromethylphenyl group;

$R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group which is substituted at the 2-position thereof with one substituent selected from the group consisting of methoxy, amino, methylamino, benzylamino and  $\alpha$ -methylbenzylamino;

B is a pyrrolidine ring or a pyrroline ring; and

$R^5$  is one substituent which is independently selected from the group consisting of hydrogen atoms, methoxy groups, methyl groups, ethyl groups, propyl groups and phenyl groups.

32. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^1$  is a phenyl, 4-fluorophenyl, 3-fluorophenyl, 3-chlorophenyl, 3,4-difluorophenyl, 3,4,5-trifluorophenyl, 3-chloro-4-fluorophenyl, 3-difluoromethoxyphenyl or 3-trifluoromethylphenyl group;

$R^2$  is an unsubstituted 4-pyridyl or 4-pyrimidinyl group, or a 4-pyridyl or 4-pyrimidinyl group which is substituted at the 2-position thereof with one substituent selected from the group consisting of methoxy, amino, methylamino, benzylamino and  $\alpha$ -methylbenzylamino;

m is 1; and

$R^5$  is one substituent which is independently selected from the group consisting of hydrogen atoms, methoxy groups, methyl groups, ethyl groups, propyl groups and phenyl groups.

33. The compound according to any one of Claims 25 to 32, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^4$  is a hydrogen atom, an unsubstituted lower alkyl group, a lower alkyl group which is substituted with one or more substituents from Substituent group  $\alpha$ , an aryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heterocyclyl group, or a heterocyclyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ .

34. The compound according to any one of Claims 25 to 32, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein  $R^4$  is a hydrogen atom, a lower alkyl group, a halogeno lower alkyl group, or a phenyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ .

35. The compound according to any one of Claims 25 to 32, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein A is a pyrazole ring having one substituent  $R^4$  or an imidazole ring having one substituent  $R^4$ .

36. The compound according to any one of Claims 25 to 32, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein A is a pyrazole ring having one substituent R<sup>4</sup>.
37. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-phenyl-4-(pyridin-4-yl)pyrazole.
38. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(3-fluorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
39. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(4-fluorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
40. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(4-fluorophenyl)-3-(2-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
41. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(4-fluorophenyl)-3-(2-phenyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
42. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(4-fluorophenyl)-3-(2-methoxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
43. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(3-chlorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.

44. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(3,4-difluorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
45. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 3-(2-ethyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-(4-fluorophenyl)-4-(pyridin-4-yl)pyrazole.
46. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, wherein the compound is 5-(4-fluorophenyl)-3-(2-propyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.
47. The compound according to Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof, selected from the group consisting of:
- 5-(4-fluorophenyl)-3-(2-hydroxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,
  - 3-(2-fluoro-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-(4-fluorophenyl)-4-(pyridin-4-yl)pyrazole,
  - 3-(2,2-difluoro-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-(4-fluorophenyl)-4-(pyridin-4-yl)pyrazole,
  - 5-(4-fluorophenyl)-3-(8-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,
  - 3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)-5-(3-trifluoromethylphenyl)pyrazole,
  - 5-(4-fluorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,
  - 3-(4-fluorophenyl)-5-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,
  - 3-(4-fluorophenyl)-1-methyl-5-(2-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,
  - 3-(4-fluorophenyl)-1-methyl-5-(2-phenyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,
  - 3-(4-fluorophenyl)-5-(2-hydroxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,



3-(4-fluorophenyl)-5-(2-methoxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,

5-(2-fluoro-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-3-(4-fluorophenyl)-1-methyl-4-(pyridin-4-yl)pyrazole,

5-(2,2-difluoro-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-3-(4-fluorophenyl)-1-methyl-4-(pyridin-4-yl)pyrazole,

3-(4-fluorophenyl)-1-methyl-5-(8-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-4-(pyridin-4-yl)-3-(3,5,6,8a-tetrahydroindolizin-7-yl)pyrazole,

5-(4-fluorophenyl)-3-(1,2,3,5,8,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(7-hydroxy-1,2,3,5,6,7,8,8a-octahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(1,2,3,5,6,7,8,8a-octahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

4-(4-fluorophenyl)-1-(1,2,3,5,6,7,8,8a-octahydroindolizin-7-yl)-5-(pyridin-4-yl)imidazole,

5-(4-chlorophenyl)-3-(1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(2-methyliden-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

3-(2-ethyliden-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-(4-fluorophenyl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(2-propyliden-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-1-methyl-3-(2-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-1-methyl-3-(2-phenyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(2-hydroxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(2-methoxy-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-1-methyl-4-(pyridin-4-yl)pyrazole,

3-(2-fluoro-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-5-(4-fluorophenyl)-1-methyl-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-1-methyl-3-(8-methyl-1,2,3,5,6,8a-hexahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

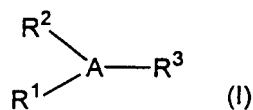
5-(4-fluorophenyl)-3-(2-methyl-3,5,6,8a-tetrahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole,

3-(2-ethyl-3,5,6,8a-tetrahydroindolizin-7-yl)-5-(4-fluorophenyl)-4-(pyridin-4-yl)pyrazole,

5-(4-fluorophenyl)-3-(2-propyl-3,5,6,8a-tetrahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole, and

5-(4-fluorophenyl)-3-(2-phenyl-3,5,6,8a-tetrahydroindolizin-7-yl)-4-(pyridin-4-yl)pyrazole.

48. A compound of the formula (I) below, or a pharmacologically acceptable salt, ester or other derivative thereof:



wherein:

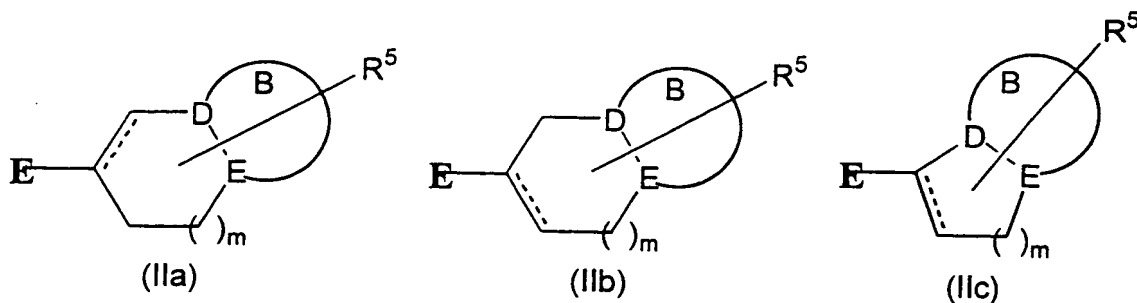
A represents a trivalent group selected from the group consisting of a benzene ring having three substituents  $\text{R}^4$ , a pyridine ring having two substituents  $\text{R}^4$ , a pyridazine ring having one substituent  $\text{R}^4$ , a pyrimidine ring having one substituent  $\text{R}^4$ , a furan ring having one substituent  $\text{R}^4$ , a thiophene ring having one substituent  $\text{R}^4$ , a pyrazole ring having one substituent  $\text{R}^4$ , an imidazole ring having one substituent  $\text{R}^4$ , an isoxazole ring and an isothiazole ring;

$\text{R}^1$  represents an unsubstituted aryl group, an aryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ , an unsubstituted heteroaryl group, or a heteroaryl group which is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ;

$\text{R}^2$  represents a heteroaryl group which has at least one ring nitrogen atom, or a heteroaryl group which has at least one ring nitrogen atom, wherein said heteroaryl

group is substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ ; and

$R^3$  represents a group of formula (IIa), (IIb) or (IIc) shown below:



wherein

a bond including a dotted line represents a single bond or a double bond,  
 $m$  represents 1 or 2,

$R^5$  represents from 1 to 3 substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

one of D and E represents a nitrogen atom and the other represents a group of formula  $>C(R^6)-$ , wherein  $R^6$  is a substituent selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$  and Substituent group  $\beta$ , and

B represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups, and

$R^4$  represents a hydrogen atom; a substituent from Substituent group  $\beta$ ; a cycloalkyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted aryl group, an aryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heteroaryl group, a heteroaryl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ; an unsubstituted heterocyclyl group, or a heterocyclyl group substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

PROVIDED THAT said substituents  $R^1$  and  $R^3$  are bonded to the two atoms of said cyclic group A which are adjacent to the atom of the cyclic group A to which said substituent  $R^2$  is bonded;

Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, nitro groups, cyano groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $-NR^aR^b$ , wherein  $R^a$  and  $R^b$  are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or  $R^a$  and  $R^b$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group;

Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with groups from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with one or groups from Substituent group  $\alpha$  and lower alkynyl which are substituted with one or more substituents which are substituted with groups from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

oxo groups; hydroxyimino groups; lower alkoxyimino groups; lower alkylene groups; lower alkylenedioxy groups; lower alkylsulfinyl groups; lower alkylsulfonyl groups; unsubstituted aryl groups; aryl groups which are substituted with groups selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

49. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmacologically acceptable salt, ester or other derivative thereof, in combination with a pharmaceutically acceptable carrier.

50. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to Claim 1, or a pharmaceutically acceptable salt, ester or other derivative thereof in combination with a pharmaceutically acceptable carrier, wherein the pharmaceutical composition is for the prophylaxis or treatment of diseases where inflammatory cytokines are involved.
51. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to Claim 1, or a pharmaceutically acceptable salt, ester or other derivative thereof in combination with a pharmaceutically acceptable carrier, wherein the pharmaceutical composition is an analgesic or an anti-inflammatory drug.
52. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to Claim 1, or a pharmaceutically acceptable salt, ester or other derivative thereof in combination with a pharmaceutically acceptable carrier, wherein the pharmaceutical composition is for the prophylaxis or treatment of chronic rheumatoid arthritis.
53. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to Claim 1, or a pharmaceutically acceptable salt, ester or other derivative thereof in combination with a pharmaceutically acceptable carrier, wherein the pharmaceutical composition is for the prophylaxis or treatment of osteoarthritis.
54. A pharmaceutical composition comprising a pharmaceutically effective amount of the compound according to Claim 1, wherein the pharmaceutical composition is for the prophylaxis or treatment of septicemia.
55. A method for inhibiting the production of inflammatory cytokines in a mammal which comprises administering to said mammal a pharmaceutically effective amount of the compound of Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof.
56. A method for inhibiting the production of inflammatory cytokines in a human which comprises administering to said human a pharmaceutically effective amount of

the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmaceutically acceptable salt, ester or other derivative thereof.

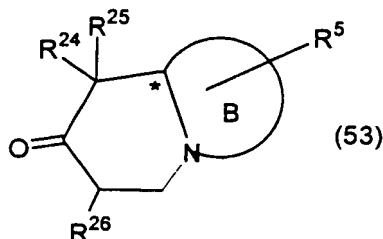
57. A method for the relief of pain and/or the treatment of inflammation in a mammal which comprises administering to said mammal a pharmaceutically effective amount of the compound of Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof.

58. A method for the relief of pain and/or the treatment of inflammation in a human which comprises administering to said human a pharmaceutically effective amount of the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmaceutically acceptable salt, ester or other derivative thereof.

59. A method for the prophylaxis or treatment of chronic rheumatoid arthritis in a mammal which comprises administering to said mammal a pharmaceutically effective amount of the compound of Claim 1, or a pharmacologically acceptable salt, ester or

other derivative thereof.

60. A method for the prophylaxis or treatment of chronic rheumatoid arthritis in a human which comprises administering to said human a pharmaceutically effective amount of the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmaceutically acceptable salt, ester or other derivative thereof.
61. A method for the prophylaxis or treatment of osteoarthritis in a mammal which comprises administering to said mammal a pharmaceutically effective amount of the compound of Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof.
62. A method for the prophylaxis or treatment of osteoarthritis in a human which comprises administering to said human a pharmaceutically effective amount of the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmacologically acceptable salt, ester or other derivative thereof.
63. A method for the prophylaxis or treatment of septicemia in a mammal which comprises administering to said mammal a pharmaceutically effective amount of the compound of Claim 1, or a pharmacologically acceptable salt, ester or other derivative thereof.
64. A method for the treatment of septicemia in a human which comprises administering to said human a pharmaceutically effective amount of the compound according to any one of Claims 1 to 32 or 37 to 46, or a pharmacologically acceptable salt, ester or other derivative thereof.
65. A process for the preparation of a compound of formula (53) below



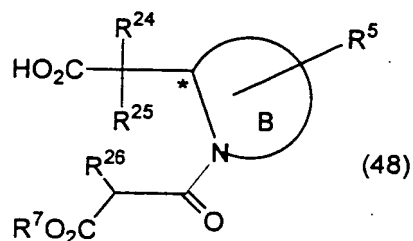
wherein,

B represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups,

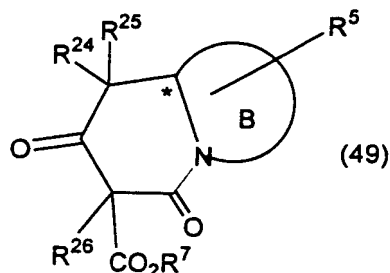
$R^5$  represents from 1 to 3 substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

$R^{24}$ ,  $R^{25}$  and  $R^{26}$  are the same or different from each other and each represents one substituent selected from the substituents defined in  $R^5$ , and the configuration based on the carbon atom which is marked by \* represents S or R, which comprises:

(a) subjecting a compound of formula (48) below or a reactive derivative thereof to ring closure



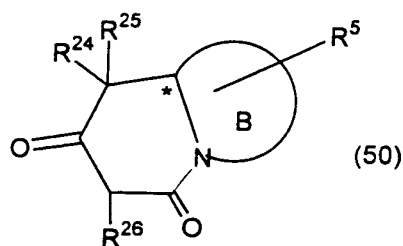
wherein, B,  $R^5$ ,  $R^{24}$ ,  $R^{25}$  and  $R^{26}$  have the same meanings as defined above,  $R^7$  represents a carboxyl protecting group and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (53), to provide a compound of formula (49) below,



wherein, B,  $R^5$ ,  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$  and  $R^7$  have the same meanings as defined above, and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (53);



(b) subjecting the compound of formula (49) to a hydrolysis reaction and a decarboxylation reaction to provide a compound of formula (50) below



wherein, B, R<sup>5</sup>, R<sup>24</sup>, R<sup>25</sup> and R<sup>26</sup> have the same meanings as defined above and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (53); and

(c) reducing the amido moiety of the compound of formula (50) to provide the compound of formula (50);

wherein Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, nitro groups, cyano groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $\text{-NR}^a\text{R}^b$ , wherein R<sup>a</sup> and R<sup>b</sup> are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or R<sup>a</sup> and R<sup>b</sup>, taken together with the nitrogen atom to which they are attached, form a heterocyclyl group;

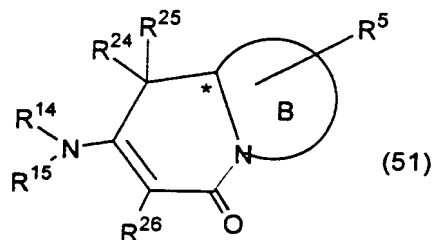
Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and lower alkynyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

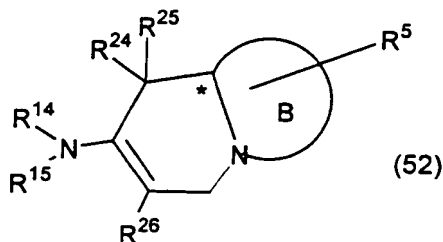
oxo groups, hydroxyimino groups, lower alkoxyimino groups, lower alkylene groups, lower alkylenedioxy groups, lower alkylsulfinyl groups, lower alkylsulfonyl groups, aryl groups, aryl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and Substituent group  $\beta$ , aryloxy groups, aryloxy groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and Substituent group  $\beta$ , lower alkylidenyl groups and aralkylidenyl groups.

66. The process according to Claim 65, wherein step (c) comprises  
(c1) reacting a compound of formula (50) with a compound of the formula  $R^{14}$ -NH- $R^{15}$ , wherein  $R^{14}$  and  $R^{15}$  are the same or different from each other and each independently represents a hydrogen atom, a lower alkyl group or an aralkyl group, or  $R^{14}$  and  $R^{15}$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group, to prepare a compound of formula (51) below



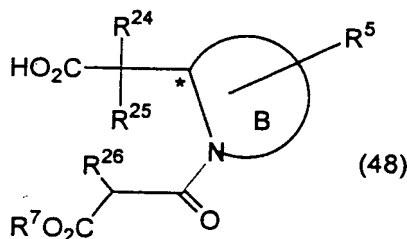
wherein, B,  $R^5$ ,  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$ ,  $R^{14}$  and  $R^{15}$  have the same meanings as defined above and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (53);

(c2) reducing an amido moiety of the compound of formula (51) to provide a compound of formula (52) below



wherein, B, R<sup>5</sup>, R<sup>24</sup>, R<sup>25</sup>, R<sup>26</sup>, R<sup>14</sup> and R<sup>15</sup> have the same meanings as defined above and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of general formula (53); and  
 (c3) subjecting the compound of formula (52) to a hydrolysis reaction to provide the compound of formula (53).

67. A process for the preparation of a compound of a formula (49) below which comprises subjecting a compound of formula (48) below or a reactive derivative thereof to a ring closure reaction



wherein

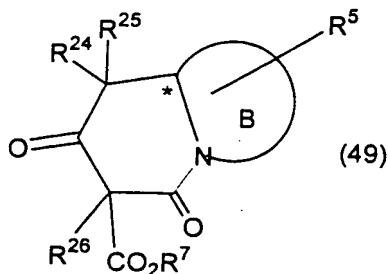
B represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups,

R<sup>5</sup> represents from 1 to 3 substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

R<sup>7</sup> represents a carboxyl protecting group,

R<sup>24</sup>, R<sup>25</sup> and R<sup>26</sup> are the same or different from each other and each represents one substituent selected from the substituents defined in R<sup>5</sup>, and the configuration based

on the carbon atom which is marked by \* represents S or R, wherein the compound of the formula (49) is as follows:



wherein, B,  $R^5$ ,  $R^{24}$ ,  $R^{25}$ ,  $R^{26}$  and  $R^7$  have the same meanings as defined above, and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of general formula (48);

Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, nitro groups, cyano groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $-NR^aR^b$  (wherein  $R^a$  and  $R^b$  are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or  $R^a$  and  $R^b$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group);

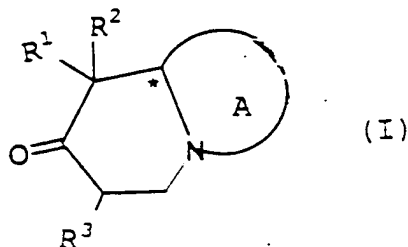
Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and lower alkynyl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

oxo groups, hydroxyimino groups, lower alkoxyimino groups, lower alkylene groups, lower alkylenedioxy groups, lower alkylsulfinyl groups, lower alkylsulfonyl groups, aryl groups, aryl groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and Substituent group  $\beta$ , aryloxy groups, aryloxy groups which are substituted with one or more substituents selected from Substituent group  $\alpha$  and Substituent group  $\beta$ , lower alkylidenyl groups and aralkylidenyl groups.

68. A process for the preparation of a compound of formula (I) below



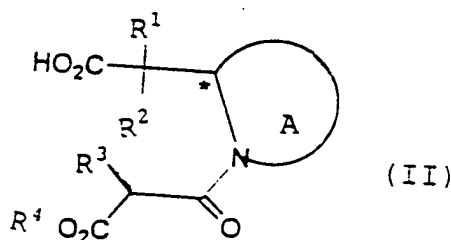
wherein

A represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may optionally be substituted with 1 to 3 substituents selected from the group consisting of Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ , and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups,

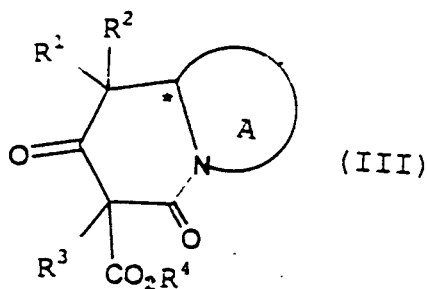
$R^1$ ,  $R^2$  and  $R^3$  are the same or different from each other and each is selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ , and the configuration based on the carbon atom which is marked by \* represents S or R,

which comprises:

(a) subjecting a compound of formula (II) below or a reactive derivative thereof to ring closure

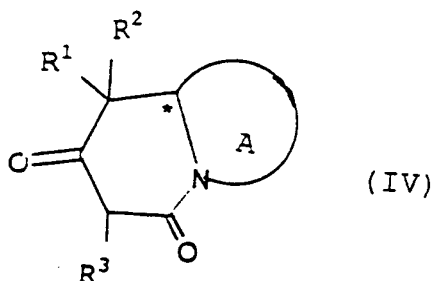


wherein, A,  $R^1$ ,  $R^2$  and  $R^3$  have the same meanings as defined above,  $R^4$  represents a carboxyl protecting group and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of general formula (I), provide a compound of formula (III) below



wherein A,  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  have the same meanings as defined above, and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (I);

(b) subjecting the compound of formula (III) to a hydrolysis reaction and a decarboxylation reaction to provide a compound of formula (IV) below



wherein A,  $R^1$ ,  $R^2$  and  $R^3$  have the same meanings as defined above and the configuration based on the carbon atom which is marked by \* represents the same configuration as the compound of formula (I); and

(c) reducing an amido moiety of the compound of formula (IV) to provide the compound of formula (I);

wherein Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $-NR^aR^b$ , wherein  $R^a$  and  $R^b$  are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or  $R^a$  and  $R^b$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group;

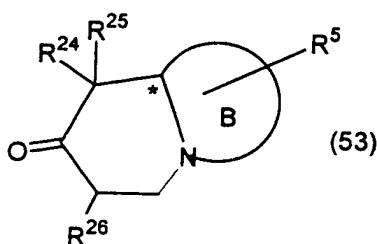
Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with groups from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with groups from Substituent group  $\alpha$  and lower alkynyl groups which are substituted with groups from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

lower alkylene groups, lower alkylenedioxy groups, lower alkylsulfinyl groups, lower alkylsulfonyl groups, unsubstituted aryl groups, aryl groups which are substituted with groups selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ .

69. A substantially pure optically active substance of formula (53) below



wherein,

B represents a 4- to 7-membered heterocyclic ring, said ring may be saturated or unsaturated, and may be fused with a group selected from aryl groups, heteroaryl groups, cycloalkyl groups and heterocyclyl groups,

$R^5$  represents from 1 to 3 substituents which are independently selected from the group consisting of hydrogen atoms, Substituent group  $\alpha$ , Substituent group  $\beta$  and Substituent group  $\gamma$ ,

$R^{24}$ ,  $R^{25}$  and  $R^{26}$  are the same or different from each other and each represents one substituent selected from the groups defined in  $R^5$ , and the configuration based on the carbon atom which is marked by \* represents S or R],

Substituent group  $\alpha$  is selected from the group consisting of

hydroxyl groups, nitro groups, cyano groups, halogen atoms, lower alkoxy groups, halogeno lower alkoxy groups, lower alkylthio groups, halogeno lower alkylthio groups and groups of formula  $-NR^aR^b$ , wherein  $R^a$  and  $R^b$  are the same or different from each other and each represents a hydrogen atom, a lower alkyl group, a lower alkenyl group, a lower alkynyl group, an aralkyl group or a lower alkylsulfonyl group, or  $R^a$  and  $R^b$ , taken together with the nitrogen atom to which they are attached, form a heterocyclyl group;

Substituent group  $\beta$  is selected from the group consisting of

lower alkyl groups, lower alkenyl groups, lower alkynyl groups, aralkyl groups, cycloalkyl groups, lower alkyl groups which are substituted with one or more substituents from Substituent group  $\alpha$ , lower alkenyl groups which are substituted with one or more substituents from Substituent group  $\alpha$  and lower alkynyl groups which are substituted with one or more substituents from Substituent group  $\alpha$ ;

Substituents group  $\gamma$  is selected from the group consisting of

oxo groups, hydroxyimino groups, lower alkoxyimino groups, lower alkylene groups, lower alkylenedioxy groups, lower alkylsulfinyl groups, lower alkylsulfonyl groups, unsubstituted aryl groups, aryl groups which are substituted with one or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ , unsubstituted aryloxy groups, aryloxy groups which are substituted with one



or more substituents selected from the group consisting of Substituent group  $\alpha$  and Substituent group  $\beta$ , lower alkylidenyl groups and aralkylidenyl groups.